Industry Report
Dutch Research Project on Design Effectiveness

Executive Summary

Emphasizing design and including designers in new product development teams contributes to new product success; and involving designers in the development of web sites and corporate visual identity contributes to improved firm image. Together, these outcomes contribute to firm performance. These are the main findings of research conducted in a large sample of Dutch firms.

Involving designers in projects is likely to lead to improved performance

Two main design foci are identified: experiential design to appeal to the senses, support self-expression and evoke emotions, and functional design, which is concerned with technology, functionality and ergonomics. The greater the involvement of designers in new product development, the greater the emphasis on both experiential design and functional design. Emphasis on both types of design contributes to product financial performance, emphasis on experiential design contributes to product experiential quality and emphasis on functional design contributes to product functional quality.

Some of the positive effects of emphasizing experiential and functional design are stronger if designers have a high level of influence on decision-making and freedom to explore concepts outside the scope of the project at hand. This suggests that to improve performance, designer influence on decision-making and designer freedom should be encouraged. Experiential and functional design innovativeness also tends to strengthen the relationships between experiential and functional design emphasis and performance outcomes.

Designer influence, designer freedom and design innovativeness strengthen many contributions of design

Customer involvement in product development weakens the positive effect of experiential design emphasis on product experiential quality. Customers can be expected to focus on features and functionality based on what they already know. Conversely, designers can be expected to take a more innovative approach. When these two influences are combined, the result is poorer experiential quality. Thus, when product experiential quality is important, the involvement of customers in product development may need to be limited. Alternatively, measures could be taken to insure that customer involvement does not detract from experiential design emphasis. These forces are different for packaging. There, the combination of customer involvement and emphasis on packaging has a positive effect on performance. Thus, involving customers in projects in which packaging is important, and thus emphasized, is likely to lead to superior performance.

Superior firm image results from increasing designer involvement in the development of web sites and corporate visual identity. This is particularly true when a firm's strategy includes a high level of experiential design innovativeness. Deliberate efforts to communicate emotional value, which is one of the concerns of experiential design, also contribute to firm image. Thus, the implication is that firms would do well to emphasize experiential design to improve their image.

Introduction

This report covers the findings of a large-scale survey-based research project funded by the BNO (Beroepsorganisatie Nederlandse Ontwerpers) and the Dutch Ministry of Economic Affairs. The focus of the research is the contribution of design to performance. The research was conducted by the Rotterdam School of Management (RSM) in collaboration with the Delft University of Technology (TUD). The research team consisted of Prof.dr.ir. Jan van den Ende (project leader, RSM), Dr. Marina Candi (RSM), Dr. Gerda Gemser (TUD) and several research assistants at RSM. Thanks are due to Prof.dr. Eric Jan Hultink for his advice on the definition of the study. Special thanks are also due to almost 400 managers in Dutch firms, each of whom generously contributed his or her time for survey taking.

Research topic

To examine the use and effectiveness of design, four types of development were studied: the development of products, packaging, web sites and corporate visual identity. The research model is shown in Figure 1. Moving from left to right in the model, we start with firm orientation with respect to design and design innovativeness. A firm's design orientation and strategy of design innovativeness can be expected to directly influence firm performance, and also to influence the way tasks are executed. At the task level we have emphasis on design in product, packaging, web site and corporate visual identity development. At the next level we have task performance, for both products and firm image. Finally, at the far right, we have the firm performance level.

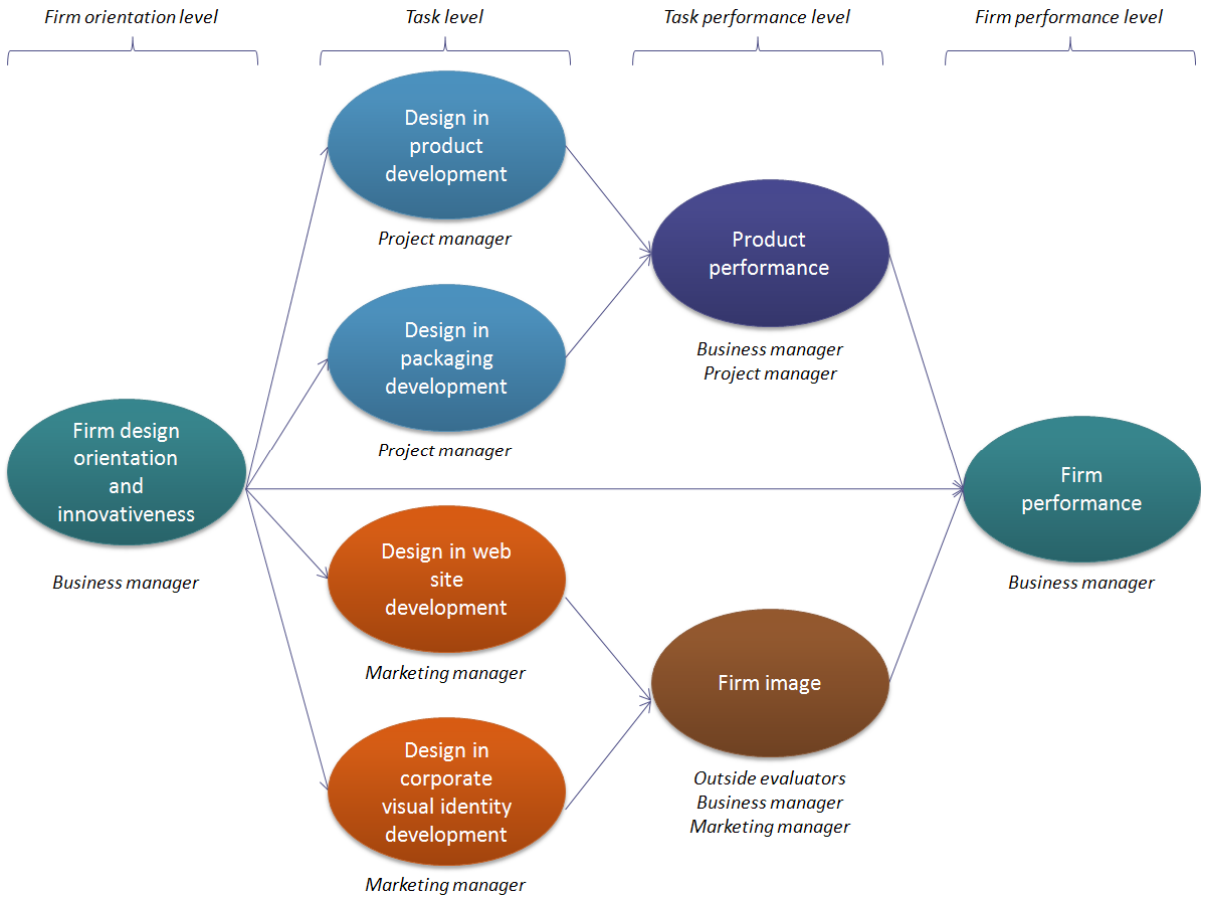

Figure 1: Research model with information about data sources.

Data collection

Phone interviews were conducted with up to three managers in each of a large sample of Dutch firms. Data were collected during the autumn of 2009. Potential participants were identified in the REACH database. The

web sites for all potential participants were examined to identify those firms that were likely to have launched a new product or service about 12 months ago. This requirement was imposed to avoid asking about products still under development or products developed a long time ago, both of which would have compromised data validity. A total of 550 potential participants were identified and 163 agreed to participate (30%). This should be viewed as a high participation rate since the request was for three phone interviews with managers lasting up to an hour each. To avoid a bias for firms that favor design, the persons recruiting firms for participation were instructed to ask for participation in innovation research rather than design research.

For each firm, a project manager who had managed the development of a specific product and its packaging was interviewed. Second, a marketing manager who was knowledgeable about the firm's web site and corporate visual identity development was interviewed. Finally, a business manager who was able to provide general information about the firm, its strategies, its competitive environment and performance was interviewed. The business manager also provided information about the firm's reputation and the performance of the product covered with the project manager. In addition to the interviews conducted with managers, two master's students evaluated each of the participating firms' web sites. This data collection strategy insured that there were at least two independent evaluations or each performance outcome under study as shown in Figure 1.

The firms included in the sample were drawn from a wide range of industry sectors as shown in Table 1. A total of 28 firms in service sectors were included in the sample and were not found to behave substantially differently from manufacturing firms in the analysis.

Table 1: Sectors represented in sample.

Sector description	Number of firms
Food and kindred products	11
Apparel and other finished products made from fabrics; leather and leather products	5
Furniture and fixtures manufacturing	14
Paper, chemicals, rubber and miscellaneous plastics products manufacturing	26
Stone, clay, glass and concrete products manufacturing	7
Fabricated metal products, except machinery and transportation equipment	14
Industrial and commercial machinery, including transportation equipment, and computer equipment	35
Electronic and other electrical equipment and components, except computer equipment	9
Measuring, analyzing and controlling instruments; photographic, medical and optical goods; clocks	8
Miscellaneous manufacturing industries	6
Service sectors (e.g. financial services, communication services, insurance, hotels, health services)	28
Total	163

When firms were recruited for participation, the first contact was asked to identify three respondents as required for the research. In some cases, only two respondents could be named at the outset and in a few cases, a named respondent was not willing to participate. The total number of each kind of survey taken is shown in Table 2. For example, 132 surveys were completed with project managers, which corresponds to 81% of the 163 participating firms.

Table 2: Types of surveys completed and numbers of questions in surveys.

Type of respondent	Number of questions	Number of surveys completed	Proportion of sample
Project manager	160	132	81%
Marketing manager	127	109	69%
Business manager[1]	143	131	80%
Outside web site evaluator (2 per firm)	90	218	69%
Total		590	

[1]These managers were persons with a broad overview of their firms, including product development in general. In many cases these were the firm's product development managers. In the cases of the smaller firms in the sample, these managers were the firms' CEOs or general managers.

Based on the number of questions in each survey listed in Table 2, a total of about 54.000 questions were asked of a total of 372 respondents. Each interview took 30-45 minutes to administer over the phone and the interviews were conducted by 7 student assistants. Consistency among the interviewers was insured through training and guidelines for how to deal with various kinds of responses. The surveys consisted of questions for which respondents selected an answer on a scale from 1 to 7 and numerical questions, in which respondents were asked to provide information about proportions or amounts, e.g. amounts of money or numbers of people. When respondents did not know an answer, refused to answer a question or claimed that a question did not apply, these answers were coded specially. The proportion of questions not answered for some reason was low and very few respondents refused to answer specific questions. This indicates that the questions were relevant and not overly invasive.

In addition to the phone surveys, six master's students in marketing at the Rotterdam School of Management conducted a total of 218 evaluations of the web sites of those firms in which a marketing manager had been surveyed. The web site evaluations consisted of 90 questions. Two independent evaluations were conducted for each web site.

The large amount of data collected and the use of multiple respondents supports the classification of this research as large-scale quantitative research with high levels of reliability and validity.

Designers and design

One of the challenges of this research was to create survey questions that would measure emphasis on, and use of, design in the development of products, packaging, web sites and corporate visual identity. Simply asking respondents to rate their emphasis on design or the amount of effort invested in design would have produced unreliable results, since the term design is understood in many different ways, including very broad definitions basically synonymous with development. Existing research was examined to obtain a set of design aspects that fall under the scope of work that might be conducted by designers. The result was the following design aspects:

Designers are persons with formal education in industrial design, graphic design, architecture, art or similar; or people with substantial experience in one or more of these fields.

- Design for technology
- Design for functionality
- Design for ease of use (ergonomic design)
- Design to appeal to one or more of the human senses (sensorial design)
- Design to evoke emotions (symbolic design)
- Design to support self-expression (symbolic design)

Two iterations of factor analysis were used to identify patterns among the above aspects and the results are shown in Figure 2. The end result is two categories of design, **functional design** and **experiential design**. Functional design includes design for technology, design for functionality and design for ease of use.

Experiential design includes design to appeal to the senses (sensorial design) and symbolic design, which in turn consists of design to evoke emotions and design to support self-expression.

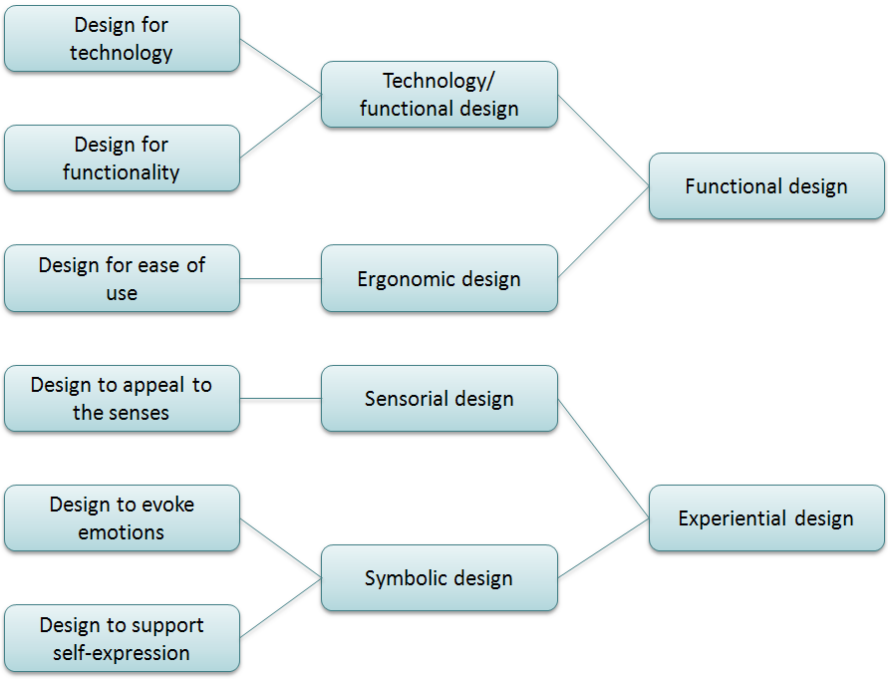

Figure 2: Development of design constructs.

Findings at the firm level

The firms included in the sample ranged widely in terms of size as shown in Table 3 and the median size was 140 employees.

Table 3: Number of employees in sampled firms.

Size range	Percentage of firms
10 or fewer	13%
11-25	9%
26-50	12%
51-100	12%
101-200	18%
201-500	16%
501-1000	7%
More than 1000	13%
Total	100%

Business managers were asked how many members of their board of directors and top management team were designers. The results were that 11% of the firms had at least one member of the board of directors who was a designer, while 29% had at least one member of the top management team who was a designer.

Design in new product development

Project managers answered questions about a specific new product development project and the associated packaging, if applicable. Among the topics covered were,

Firm experiential orientation is a measure of the extent to which a firm views sensorial design and symbolic design as strategically important.

Firm experiential innovativeness is a measure of the extent to which a firm's products are radically different from competitors' products in terms of sensorial design and symbolic design.

Firm functional orientation is a measure of the extent to which a firm views technology, functionality and ergonomics as strategically important.

Firm functional innovativeness is a measure of the extent to which a firm's products are radically different from competitors' products in terms of technology, functionality and ergonomics.

emphasis on various aspects of design and the make-up of the project development team with particular emphasis on the involvement of designers. Figure 3 shows how design emphasis and designer involvement in the development of a specific new product are influenced by firm-level orientation to experiential and functional design and experiential and functional design innovativeness.

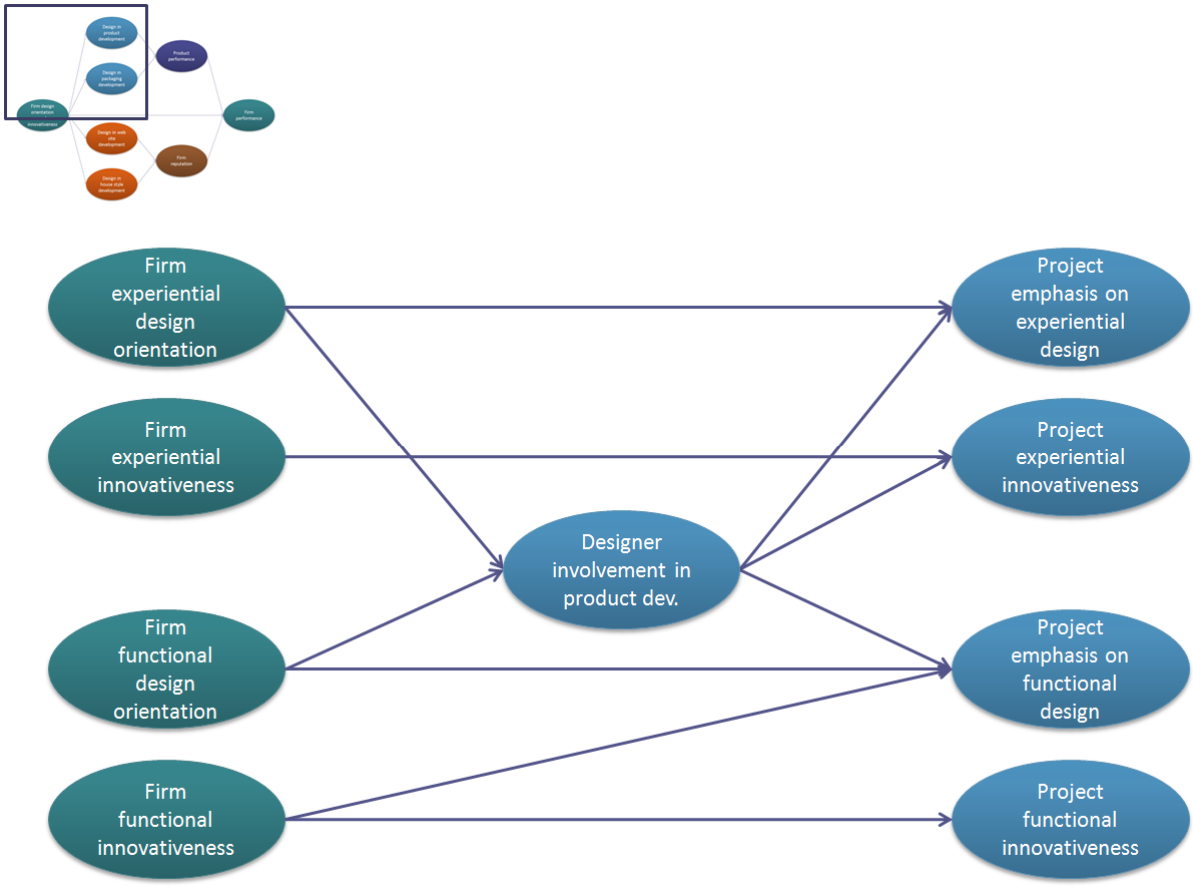

Figure 3: Relationships between firm orientation (left of diagram) and designer involvement (top center of diagram) and design emphasis (right of diagram) in the development of a specific new product.

Project managers answered several questions about the make-up of their project teams with specific focus on the number of team members who were designers. Project managers also answered questions about how the project effort was divided between designers and other team members. Designer involvement in new product development was calculated by dividing the total number of person-months worked by designers on a project by the total number of project person-months.

Designer involvement in new product development is calculated as the number of person-months worked on a product development project by designers divided by the total number of project person-months.

Designers involved in 80% of new product development projects

Summary statistics for designer involvement in the projects studied are shown in Table 4. Interestingly, 80% of the new product development projects included at least one team member or external participant who was a designer. This suggests that awareness about the potential benefits of including designers in new product development projects is quite high.

Table 4: Summary statistics for designer involvement in new product development projects.

	Proportion of projects
New product development projects in which at least one designer was involved	80%
If at least one designer involved:	
Average designer person-months on project as proportion of total project person-months	19%
Average proportion of idea phase work performed by designers	19%
Average proportion of development phase work performed by designers	21%
Average proportion of commercialization phase work performed by designers	14%
New product development projects in which external design firms were used	26%
If external design firm used:	
Average external designer person-months as proportion of total project person-months	34%
Proportion of new product development projects that included packaging	73%
If packaging included:	
Average proportion of packaging development by designers	23%

Contribution of design to new product success

A large number of questions about various aspects of project performance compared with competitors were included in the surveys for business managers and project managers. Based on factor analysis, three performance factors were identified. Firstly, **product financial performance** provides a measure of the financial returns gained from a project. Secondly, what will be referred to as **product experiential quality** encompasses a product's sensorial and symbolic quality. Thirdly, **product functional quality** refers to the quality of a product's technology and functionality and its ease of use. The relationships between designer involvement and design emphasis on product performance are shown in Figure 4. Designer involvement in product development contributes to product success through its influence on emphasis on experiential design and functional design as well as experiential design innovativeness.

Product financial performance is a measure of how well the new product met expectations about customer attraction, revenues and profitability and the degree of the product's contribution to firm competitive advantage and reputation based on manager perceptions.

Product experiential quality is a measure of the product's quality in terms of sensorial and symbolic design compared with competitors' products based on manager perceptions.

Product functional quality is a measure of the product's quality in terms of technology, functionality, ease of use, features, reliability and durability compared with competitors' products based on manager perceptions.

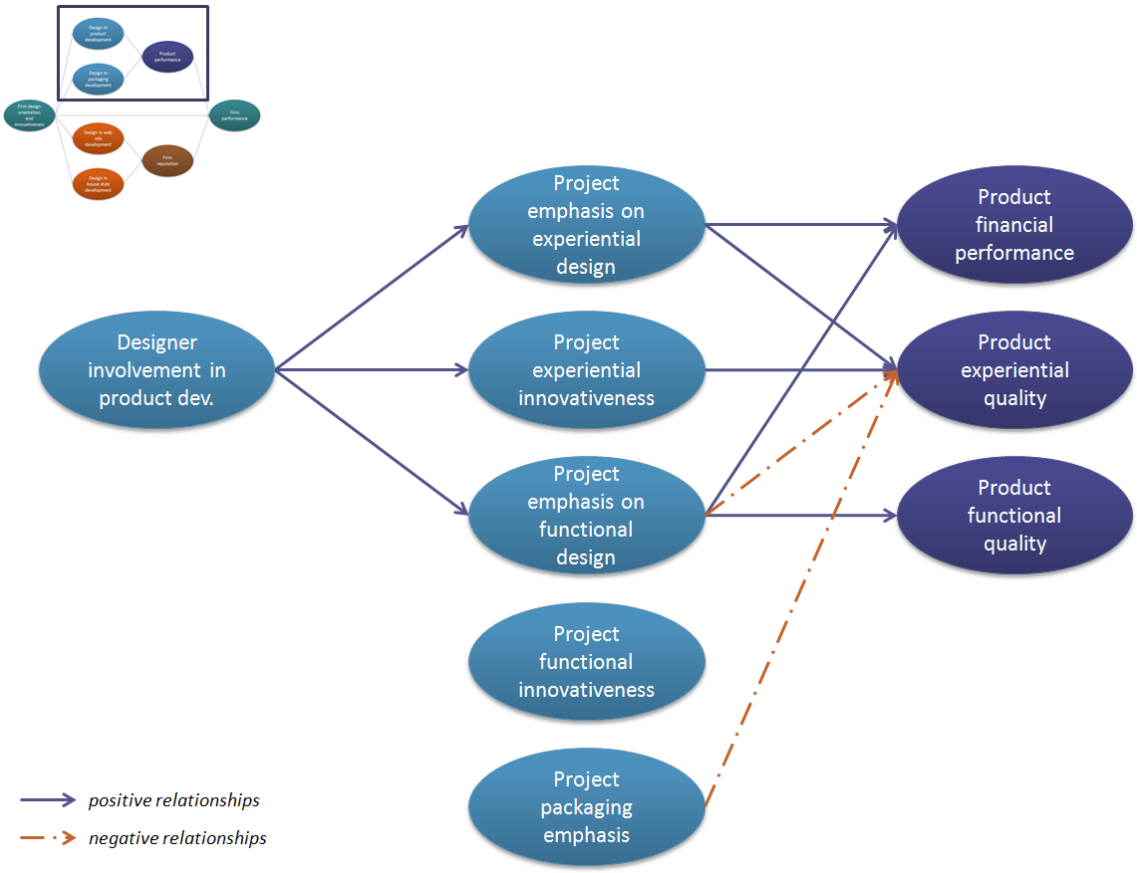

Figure 4: Relationships between the task level (left) and the task performance level (right) for new product development.

Based on the findings shown in Figure 4, we can surmise that product development projects in which there is high emphasis on both experiential and functional design are more likely to perform well financially than projects in which these two types of design are not emphasized. The contributions of experiential design emphasis and functional design emphasis to product financial performance are similar in size. The results indicate that, on average, new product development projects with high emphasis on experiential design will result in 9% better financial performance than projects in which there is a medium emphasis on experiential design. Similarly, new product development projects with high emphasis on functional design will have on average 10% better financial performance than those with medium emphasis. When taken together, we see that if both emphasis on experiential design and functional design in a project are high, product financial performance will be about 20% better than for a project with medium emphasis on

Experiential and functional design emphasis are both related with improved product financial performance

Project emphasis on experiential design is a measure of the degree to which sensorial design and symbolic design were emphasized for the project under study compared with other development projects in the firm.

Project emphasis on functional design is a measure of the degree to which technology, functionality and ergonomics were emphasized for the project under study compared with other development projects in the firm.

Project experiential innovativeness is a measure of the degree to which the sensorial design and symbolic design of the new product under study were radically different from other that of products developed by the firm.

Project functional innovativeness is a measure of the degree to which the technology, functionality and ergonomics of the new product under study were radically different from that of other products developed by the firm.

Project packaging emphasis is a measure of the degree to which packaging was emphasized in the project under study compared with other development projects.

both. The overall conclusion is that firms that want to optimize financial performance of their product development activities should emphasize both functional and experiential design.

A product's experiential quality is improved with high emphasis on experiential design and experiential design innovativeness, and a product's functional quality is improved with high emphasis on functional design. This means that in addition to their effects on financial performance, emphasis on experiential design and emphasis on functional design each have positive effects on the corresponding aspects of product quality.

Conversely, project emphasis on functional design and packaging both detract from a product's experiential quality. This suggests a possible trade-off between emphasizing experiential design and functional design. Trade-offs between technology and aesthetics are commonly seen in products, and it is likely that what we are seeing here is a manifestation of such trade-offs. The implications are that if a firm is more concerned with experiential quality than financial performance, which might be the case, for example, in the entertainment, hospitality or cultural sectors, it should emphasize experiential design over functional design. If financial performance is most important, a firm should emphasize both experiential and functional design in new product development, despite the negative effect of functional design emphasis on experiential quality.

Interestingly, there is not a significant relationship between designer involvement in product development and packaging emphasis. This may be because in many of the cases studied product packaging was entirely utilitarian and, therefore, not particularly likely to be developed by designers. This explanation is supported by the fact that the average proportion of packaging development performed by designers was only 23% as shown in Table 4. This may explain the negative relationship between project packaging emphasis and product experiential quality, which will be further discussed below.

Impact of experiential and functional design innovativeness

Experiential and functional design can be incremental, which implies only minor improvements to existing design, or innovative, meaning a substantial departure from what a firm has done before. Emphasis on experiential design, functional design or packaging tend to contribute more to performance when experiential design or functional design is more innovative. Examples are shown in Figure 5 where we see that the lines for high experiential or functional design innovativeness have a stronger positive slope than the lines for low experiential or functional innovativeness.

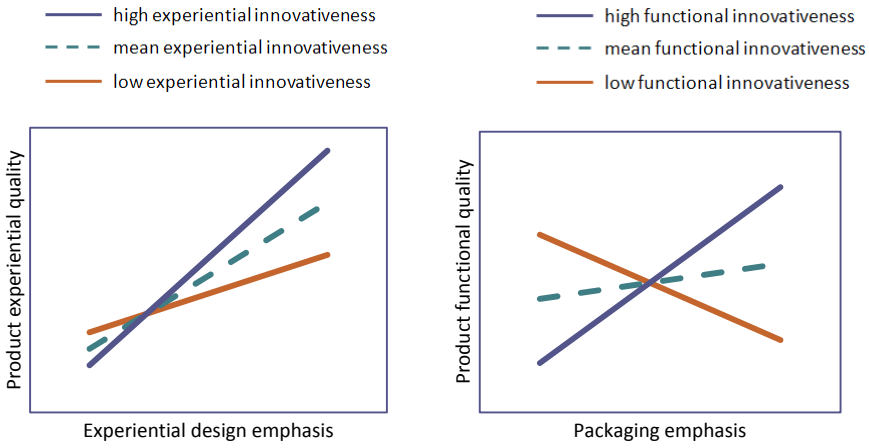

Figure 5: Examples of the moderating effects of experiential and functional design innovativeness. In these diagrams we see that experiential design emphasis and packaging emphasis contribute more to performance when experiential or functional innovativeness is high.

Adopting a more innovative strategy is likely to raise the costs of product development. Nevertheless, our findings suggest that when experiential or functional innovativeness are combined with emphasis on

experiential design or packaging emphasis, financial performance is improved. These forces are not seen when experiential or functional innovativeness are combined with emphasis on functional design, where there is no significant influence. The practical implications are that firms should encourage and foster innovative experiential and functional design even if there are associated costs, particularly in projects that emphasize experiential design or packaging. In doing this, they are likely to reap improved financial performance.

Impact of designer influence and designer freedom

Designers involved in new product development can have varying degrees of influence on project decision making and varying degrees of freedom to pursue ideas outside the scope of the project. When we consider the combination of designer influence or designer freedom and emphasis on experiential design, functional design or packaging, we get some interesting findings.

Designer influence is a measure of the degree to which designers influence decision making in all stages of the new product development process including the idea phase, the development phase and the commercialization phase.

Designer freedom is a measure of the extent to which designers are provided the freedom and resources to pursue ideas that follow outside the scope of the project at hand.

The greater the extent to which designers are given the freedom to pursue ideas outside the scope of the project, the stronger is the positive influence of experiential design emphasis on product experiential quality as shown in Figure 6a. Allowing freedom for designers is likely to bring with it additional costs since designers are likely to spend time and resources to pursue ideas that fall outside the project scope. However, product experiential quality is positively influenced by designer freedom, which suggests that there are short-term benefits. Long term benefits may also result, since designer freedom to pursue ideas outside the scope of the project at hand may result in the identification of new opportunities that can be embodied in later development projects.

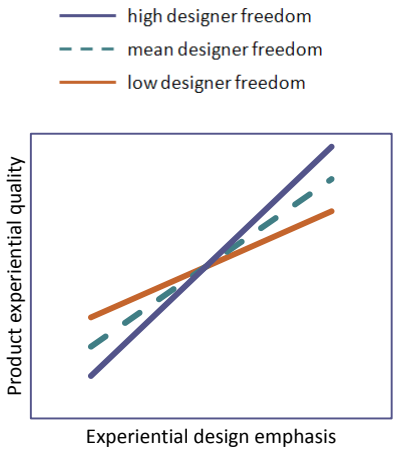

Figure 6a: Moderating effect of designer freedom on the relationship between experiential design emphasis and product experiential quality. The greater designer freedom, the stronger the positive influence of experiential design emphasis on product experiential quality.

When high designer influence and packaging emphasis are combined, the result is a more positive contribution to product financial performance. Conversely, when low designer influence is combined with packaging emphasis, the result is a negative impact on product financial performance. This is shown in Figure 6b. The implication is that in projects where packaging is important, and thus should be emphasized, it is also important to insure that designers have a high level of influence on decision making in the project.

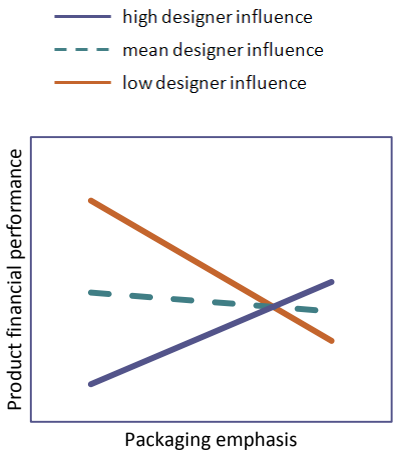

Figure 6b: Moderating effect of designer influence on the relationship between packaging emphasis and product financial performance. When designer influence is high, packaging emphasis influences product financial performance positively, but when designer influence is low, the effect is reversed.

Recall the negative relationship between project packaging emphasis and experiential quality shown in Figure 4. When combined with designer influence or designer freedom this negative influence of packaging emphasis disappears as shown in Figure 6c. In the earlier discussion, we hypothesized that there might be a trade-off between experiential emphasis and packaging emphasis, probably at least in part due to the utilitarian nature of packaging. Here we see that if designers have a high level of influence and freedom the force of this conflict seems to be diminished.

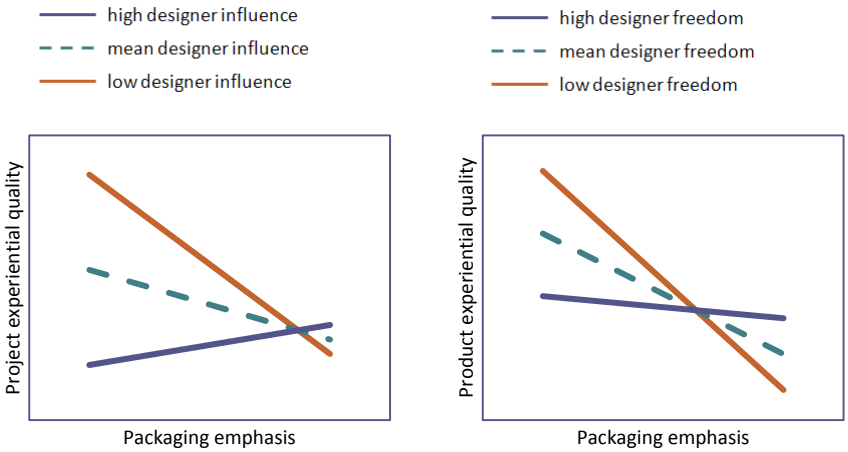

Figure 6c: Moderating influences of designer influence and designer freedom on the relationship between packaging emphasis and product experiential quality.

Finally, when high designer influence is combined with high packaging emphasis, the result is improved product functional quality. Conversely, if designer influence is low, the result is decreased functional quality as packaging emphasis increases. The implication here is that a high level of designer influence is required to insure that a product's packaging, when emphasized, contributes to functional quality.

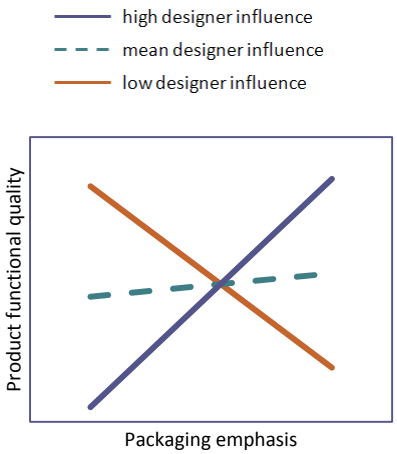

Figure 6d: Moderating effect of designer influence on the relationship between packaging emphasis and product functional quality. When designer influence is high, packaging emphasis has a positive effect on product functional quality, but when designer influence is low, this effect becomes negative.

Impact of customer involvement

Sometimes customers are involved in new product development. Customers can participate in defining the needs for new products and in the actual development and testing at various stages of implementation. The combination of putting emphasis on packaging and high customer involvement appears to contribute positively to product financial performance, but packaging emphasis in combination with low customer involvement has a negative effect on product financial performance, as shown in Figure 7a. This implies that to gain financial benefits from packaging emphasis, customers should be involved. The same pattern is seen for product functional quality as shown in Figure 7a.

Customer involvement is a measure of the extent to which customers participated directly in product development, were asked to try out what had already been developed (e.g. prototypes) and the extent to which product development incorporated direct observation of customers or users.

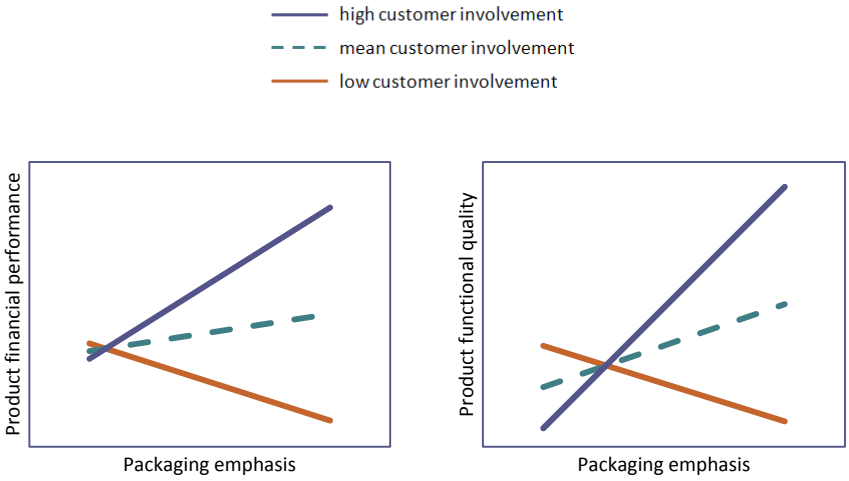

Figure 7a: Moderating effect of customer involvement on the relationships between packaging emphasis and product financial performance and product functional quality. Packaging emphasis has a positive effect on both product financial performance and functional quality when customer involvement is high. If customer involvement is low, the effect is negligible or slightly negative.

Somewhat surprisingly, the combination of customer involvement and high emphasis on experiential design weakens the effect of experiential design emphasis on experiential quality, as shown in Figure 7b. A possible

explanation is that if customers are involved in product development they are likely to emphasize what they already know, and they will thus stick to known designs. Designers are likely to choose more novel designs. Thus, a conflict of interests may come up between customers and designers, leading to decreased experiential quality.

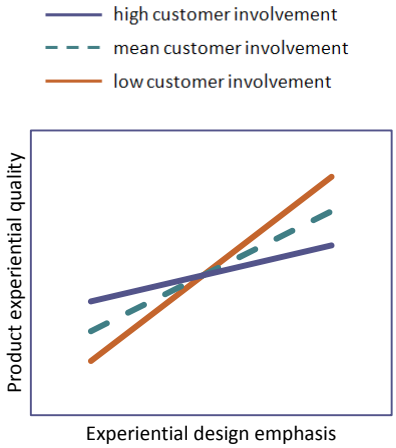

Figure 7b: Moderating effect of customer involvement on the relationship between experiential design emphasis and product experiential quality. The greater the customer involvement, the weaker the relationship between experiential design emphasis and product experiential quality.

Design in corporate visual identity and web site development

Marketing managers answered several questions about the make-up of the teams involved in web site development and corporate visual identity development, respectively, with specific focus on the number of team members who were designers. Designer involvement in web site development and corporate visual identity development was calculated by dividing the total number of designers involved in each of these efforts by the total number of employees involved.

Summary statistics for designer involvement in web site development and corporate visual identity development are shown in Table 5. The proportion of these projects involving at least one designer is large (91-92%) as well as the proportion of these projects in which external design firms were used (82-85%). This indicates that firms tend to view web sites and corporate visual identity as something that designers should be involved in developing. However, the development teams also involved persons who were not designers. The average proportion of team members who were designers was 64% for corporate visual identity and 66% for web sites and, thus, 36% and 34%, respectively, were non-designers.

Table 5: Summary statistics for designer involvement in web site and corporate visual identity development.

	Proportion of projects
Web site development projects in which at least one designer was involved	92%
If at least one designer involved:	
Average number of designers on project as proportion of total team size	66%
Web site development projects in which external design firms were used	82%
Corporate visual identity development projects in which at least one designer was involved	91%
If at least one designer involved:	
Average number of designers on project as proportion of total team size	64%
Corporate visual identity development projects in which external design firms were used	85%

Contribution of designers to firm image

Two master's students in the field of marketing evaluated the firm image of each of the participating firms based on an examination of their web sites. Although an examination of web sites is a limited basis on which to evaluate firm image, it is appropriate when the purpose is to compare this image with designer involvement in web site development and - since corporate visual identity can be expected to manifest itself in a firm's web site - also corporate visual identity development.

The findings for web sites and corporate visual identity are shown in Figure 8. The greater the involvement of designers in both these efforts, the better the outcome in terms of perceived firm image. The implication is that firms should strive to involve designers in their web site and corporate visual identity development activities.

Firm image is a measure of the degree to which a firm is perceived to be socially responsible, emotionally appealing, sell good products and services, have a clear vision and good leadership, be financially successful and a good employer.

Marketing managers answered questions about efforts spent on communicating various messages including the messages of social responsibility, emotional appeal, product quality, vision and leadership, financial success and being a good employer. These were general emphases at the firm level that are likely to have been reflected in emphases in web site and corporate visual identity development. Only two of these efforts were found to be related with outside evaluations of firm image, namely effort spent on creating an image of clear vision and good leadership and emotional appeal. This suggests that firms will reap the greatest benefits in terms of firm image by communicating messages of clear vision and strong leadership as well as emphasizing emotional appeal. Among the concerns of experiential design is evoking emotions, which suggests that experiential design should be used to create emotional appeal, which in turn is likely to improve a firm's image.

Interestingly, there was not a statistically significant relationship between firm experiential design orientation and designer involvement in web site design. This lack of relationship may reflect the fact that web site development is often driven from a firm's IT department rather than being based on overall firm strategy. Firm functional orientation was not related with designer involvement in corporate visual identity or web sites and so is not shown in Figure 8. A factor that did influence the task-level variables here is proactive market orientation, which refers to a firm's strategy to anticipate customer needs and wants before customers are able to articulate them or the market expects them.

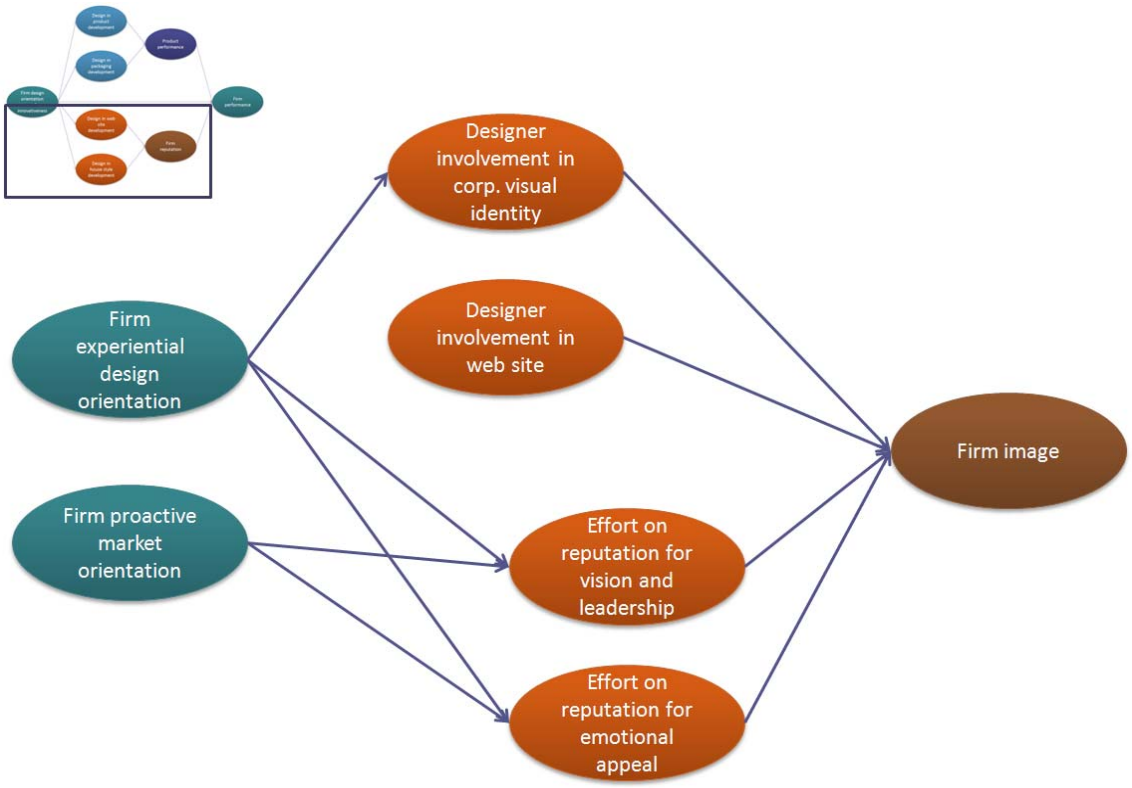

Figure 8: The relationships between designer involvement in web site development and corporate visual identity and firm image.

Moderating influences were examined for the relationships shown in Figure 8. The relationships between designer involvement in web sites and corporate visual identity and firm image were both moderated positively by firm experiential innovativeness. This suggests that firm image will benefit more from designer involvement in web site development and corporate visual identity development if a firm adopts an innovative strategy to experiential design as shown in Figure 9.

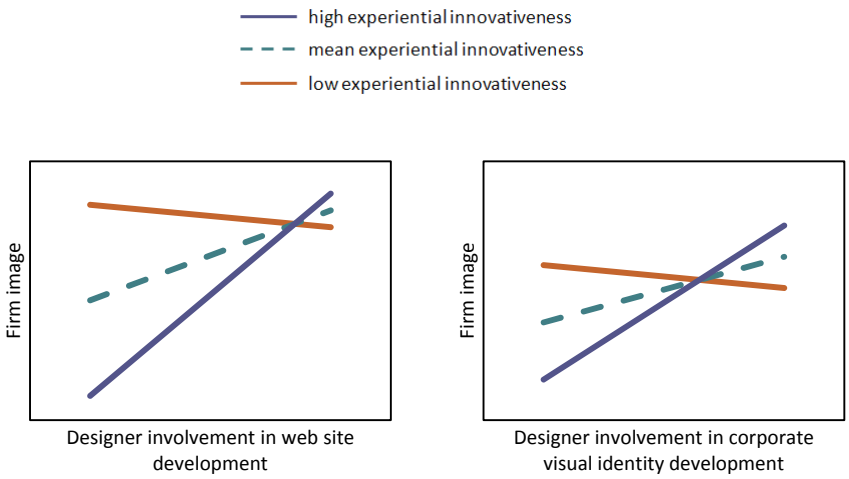

Figure 9: Moderating effect of firm experiential innovativeness on the relationships between designer involvement in the development of web sites or corporate visual identity and firm image. When firm experiential innovativeness is high, designer involvement has a positive effect on firm image, but when experiential innovativeness is low the effect is negligible.

Designer freedom did not significantly moderate the relationships. In other words, it doesn't seem to pay off to give designers a high level of freedom when developing web sites or corporate visual identity.

Design and firm performance

The business manager survey included several questions to measure firm performance. Based on explorative factor analysis, four performance factors were identified. These were firm **financial performance**, **customer satisfaction**, **general firm reputation** and **firm reputation for innovativeness**. The relationships between these performance measures and the task performance level of Figure 1 are shown in Figure 10.

Figure 10 clearly shows that product performance and the firm image derived from the web site and corporate visual identity have positive effects on different aspects of firm performance.

Firm financial performance is a measure of how well the firm has performed compared with competitors in terms of increasing sales, profitability, return on investments, return on sales and reaching financial goals.

Firm customer satisfaction is a measure of how well the firm has performed compared with competitors in terms of customer satisfaction, delivering value to customers, delivering what customers want and customer retention.

Firm general reputation is a measure of the degree to which a firm is trusted, is viewed as a preferred employer, is viewed as socially responsible, is viewed as a preferred supplier and is viewed as a good investment option.

Firm reputation for innovativeness is a measure of the degree to which the firm is viewed as highly innovative.

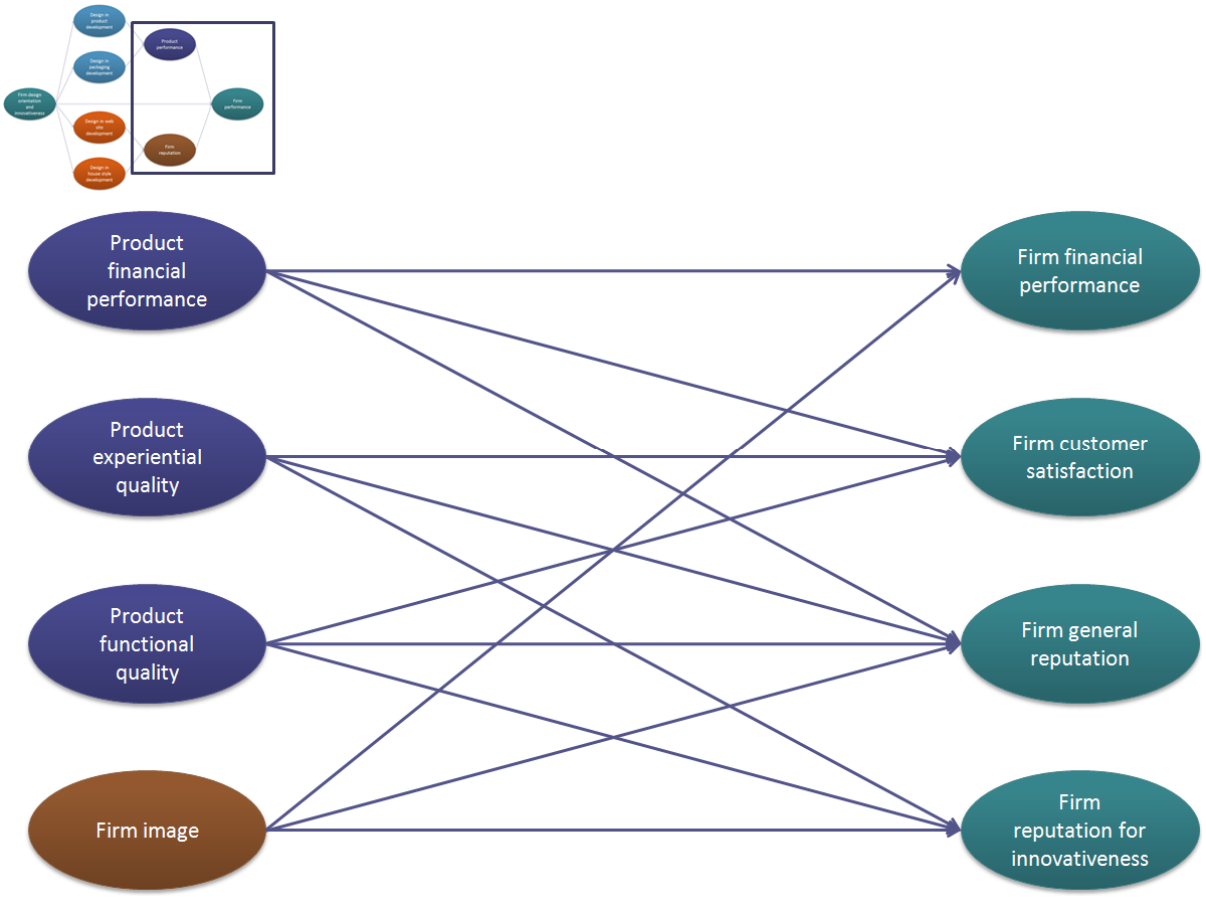

Figure 10: Relationships between product performance and firm image and measures of firm performance.

Conclusion

This report covers research conducted in a large sample of Dutch firms to explore the effectiveness of design. The overarching conclusion of the research is that design emphasis and designer involvement in firm activities are likely to result in improved performance at both the task level (product/service development, web site development, corporate visual identity development) and at the overall firm level. The relationships are moderated in a number of ways by design innovativeness, designer influence, designer freedom and customer involvement. Therefore, it is important to take a comprehensive view, in which such factors are taken into account, when making decisions about design emphasis and designer involvement to insure the best possible outcome.